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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/811,088	03/25/2004	Gregory L. Plett	LGC-0004 (0009587-0006)	9743
23413	7590	09/25/2006	EXAMINER BOATENG, ALEXIS ASIEDUA	
CANTOR COLBURN, LLP 55 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002			ART UNIT 2838	PAPER NUMBER

DATE MAILED: 09/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/811,088

Applicant(s)

PLETT, GREGORY L.

Examiner

Alexis Boateng

Art Unit

2838

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-74 is/are pending in the application.
- 4a) Of the above claim(s) 30-74 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☒ Claim(s) 7, 10, 14, 15, 17 - 26 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election with traverse of Group I claims 1 - 29 in the reply filed on 6/07/06 is acknowledged. The traversal is on the ground(s) that there is no serious burden and only one class needs to be searched. This is not found persuasive because there is a burden on the examiner because two different inventions are claimed in the application. The examiner is only allotted a certain amount of time to examine one invention, and it becomes a burden if two inventions are examined within one application. Furthermore, even though the claims are drawn to the same class, but just different subclasses, different issues are at stake and must be examined differently and extensively.

The requirement is still deemed proper and is therefore made FINAL.

### ***Claim Rejections - 35 USC § 101***

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1 – 29 are rejected under 35 U.S.C. 101. The claimed invention is directed to non-statutory subject matter because all the claims, applicant claims only mathematical calculating algorithms. It does not appear that any physical steps are required as one could simply be making calculations that are for a battery represented in a look-up table. Furthermore, data gathering steps are not sufficient. Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 – 3, 6 – 9, 12 – 13, 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jae-Seung (U.S. 2004/0000892) in view of Usuda (U.S. 5,658,682).

**Regarding claim 1**, Jae-Seung discloses wherein a method for estimating the maximum discharge power of a battery comprising:

calculating a maximum discharge current of said battery based on voltage limits of said battery (figure 3 items 150 discloses wherein a maximum current is calculated from the voltage; paragraphs [0038] – [0042]: maximum discharge current from no load voltage, which can be at any charge such as full charge which correspond to maximum voltage). Jae-Seung discloses the invention as previously claimed, but not the remainder. Usuda discloses in figure 2 wherein s4 is calculating said maximum discharge power based on said maximum discharge current value. At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify the Jae-Seung system with the Usuda system so that a steady state of charge can be determined.

**Regarding claim 2**, Jae-Seung discloses in paragraph [0011] wherein calculating a maximum discharge current of said battery based on state-of-charge limits of said battery. Jae-Seung further discloses in paragraph [0011] calculating a maximum discharge current of said battery based on current limits of said battery. Jae-Seung discloses the invention as previously claimed, but does not disclose the remainder. Usuda discloses in column 3 lines 66 – column 4 lines 1 – 14 and in column 5 lines 45 – 56 wherein the maximum discharge power is calculated from a minimum value of discharge current chosen among said calculated maximum discharge current based on voltage limits, said calculated maximum discharge current based on state of charge limits, and said calculated maximum discharge current based on current limits. At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify the Jae-Seung system with the Usuda so that the capacity of a battery can be determined without being influenced by battery conditions.

**Regarding claim 3**, Jae-Seung does not disclose the invention as claim. Usuda discloses in column 3 lines 8 – 17 wherein the discharge power takes into account of a horizon of  $\Delta t$ . At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify the Koo system with the Usuda system so that the current may be continuously detected.

**Regarding claim 6 and 12**, Jae-Seung discloses wherein said battery is a battery pack comprising  $n$  cells (figure 5 shows wherein there is a battery with  $n$  cells).

**Regarding claim 8**, Jae-Seung discloses wherein maximum discharge current of said battery pack is based on state-of-charge limits (paragraph [0011] – [0013]).

**Regarding claims 9 and 13**, Jae-Seung discloses wherein calculating maximum discharge current of said battery based on voltage limits uses a cell model. Jae-Sueng further discloses in wherein said cell model is  $V_k(t + \Delta t) = OCV(z_k(t + \Delta t)) - Rx_{ik}(t)$  (paragraph [0038]).

**Regarding claim 28**, Jae-Sung does not disclose the invention as claimed.

Usuda discloses in figure 8 and in column 6 lines 53 – 65 wherein the voltage limits is dependent on temperature. At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify the Jae-Seung system with the Usuda system so that a more accurate reading of the battery's capacity is given.

**Regarding claim 29**, Jae-Seung does not disclose the invention as claimed.

Usuda discloses in column 1 lines 39 – 50 wherein the maximum discharged power is checked to ensure is falls within power limits of said battery. At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify the Jae-Seung system with the Usuda system so that the battery isn't over-discharged.

4. Claims 4, 5, 11 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jae-Seung (U.S. 2004/0000892) in view of Usuda (U.S. 5,658,682) as applied to claim 1 and in further view of Plett (U.S. 6,534,954).

**Regarding claim 4**, neither Jae-Seung nor Usuda disclose the invention as claimed. Plett discloses in column 9 lines 28 – 39 wherein the state of charge limits are determined by using a Kalman filtering method. At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify the Jae-Seung and Usuda system so that the internal states of the battery's system may be determine by using output values.

**Regarding claim 5**, neither Jae-Seung nor Usuda disclose the invention as claimed. Plett discloses in column 5 lines 1 – 17 wherein the uncertainty yielded by the Kalman filtering method is minimized so that more weight or, the confidence level is increased of the predicted measurement. At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify the Jae-Seung and the Usuda system with Plett so that the error value is minimized to provide a more accurate reading of the values.

**Regarding claims 11 and 16**, neither Jae-Seung nor Usuda disclose the invention as claimed. Plett discloses in column 8 line 10 – 25 wherein said cell model is solved by using a discrete time-space model to calculate the SOC. At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify the Jae-Seung and Usuda so that the current can be calculated easier and provide a more accurate reading.

5. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jae-Seung (U.S. 2004/0000892) in view of Usuda (U.S. 5,658,682) as applied to claim 1 and in further view of Kawakami (U.S. 6,563,318).

**Regarding claim 27**, neither Jae-Seung nor Usuda disclose the invention as claimed. Kawakami discloses in column 21 lines 45 – 51 wherein the voltage may be calculated to the limits of infinity. At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify the Jae-Seung and Usuda system with the Kawami system so that all values are taken into consideration to maintain proper discharge.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexis Boateng whose telephone number is (571) 272-5979. The examiner can normally be reached on 8:30 am - 6:00 pm, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Karl Easthom can be reached on (571) 272-1989. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Art Unit: 2838

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AB

  
KARL EASTHOM  
SUPERVISORY PATENT EXAMINER